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INTELLIGENT INFORMATION TECHNOLOGIES AS KEY INNOVATION IN MANAGEMENT OF MODERN EDUCATION IN TIMES OF CRISIS

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Abstract. *The article examines intelligent information technologies (IIT) as a key tool for innovative and anti-crisis educational management. In conditions of global instability, IIT — combining artificial intelligence, machine learning, big data analytics, and expert systems — enable a shift from reactive to proactive strategies through real-time monitoring, predictive analytics, decision modeling, and resource optimization. The study emphasizes hybrid AI approaches that enhance adaptability and personalization, while noting challenges such as high costs, staff shortages, and cybersecurity risks. Strategic adoption of IIT is shown to be essential for resilience, competitiveness, and sustainable development of education during crises.*

Key words: *innovative educational management, crisis management, intelligent information technologies, hybrid AI*

Introduction.

In the modern world, characterized by globalization, digitalization and a high degree of uncertainty, innovation management ceases to be simply a desirable attribute and becomes a critically important condition for the survival and development of any organization [1], [2]. In other words, innovation management is of key importance for any organization that seeks growth and competitiveness, since it represents a comprehensive approach to change management, the introduction of new ideas and technologies [3], [4]. *A separate and very important place in this process is occupied by the sphere of education, where innovation management has a multiplier effect, affecting both the quality of education and the future of society as a whole.*

Modern innovation management is of key importance for organizations that seek sustainable growth and effective adaptation to dynamic external conditions (probabilistic and/or fuzzy uncertainties) [5], [6]. *This importance is especially noticeable in the sphere of education, where innovations play a crucial role in adapting to the changing requirements of society, technology and the labor market.*

The author also emphasizes that in the modern world, which is especially

characterized by the high speed of change, global interdependence and digital transformation, crises have become an inevitable part of business and social life [7], [8]. From financial shocks and natural disasters to cyberattacks and reputational scandals, any organization/enterprise can face unexpected threats and risks [9]. Traditional approaches to crisis management, based on manual information collection and slow decision-making, are no longer effective [10]. They are being replaced by innovative methods that use advanced technologies and non-standard strategies [11]. These innovations are changing the paradigm of crisis management: instead of passive waiting and emergency response, companies are moving to proactive management, where the main emphasis is on forecasting, preventive measures and rapid adaptation to minimize their consequences and even qualitative transformation for future growth opportunities [12]. *This is a key element of modern anti-crisis educational management, which allows educational institutions and organizations not only to survive in an unstable environment, but also to become stronger.*

The Main Part.

One of the most promising tools in the field of anti-crisis management in the educational sphere is intelligent information technologies (IIT), which allow for high-quality and effective automation of analysis and analytics of large batch and streaming data, based on their results, to perform scenario-based prescriptive modeling for optimal operational, tactical and strategic educational management, which becomes even more relevant in times of crisis.

Intelligent information technologies (IIT) are a class of information technologies that use artificial intelligence methods to solve problems that require imitation of elements/stages of human expert thinking. Intelligent information technologies are a specialized category of innovative IT [13] focused on the automation of intelligent processes.

Key features of IIT: unlike traditional IT, which works strictly according to predefined algorithms, IIT is able to: adapt to new conditions [14], learn from data [15], detect hidden patterns [16], perform regression forecasting [17] and, finally, model [18] under conditions of uncertainty.

Intelligent information technologies operate with knowledge throughout its entire life cycle, from acquisition to application to decision-making. The process can be divided into several key stages: knowledge acquisition; knowledge representation [18]; knowledge storage [19]; knowledge processing, analysis and analytics; knowledge application [19]; updating and self-learning [20].

Intelligent information technologies in education are a set of digital solutions that use artificial intelligence methods [22], machine learning, data analysis and expert systems to automate, optimize and improve the quality of educational processes and manage them.

Let us consider the role of intelligent information technologies in anti-crisis educational management: implementation of IIT in educational management provides: operational collection and analysis of information about the state of educational institutions; - identification of risks and threats based on statistical analysis and predictive models; - development of adaptive strategies for responding to crisis situations; - automation of routine management processes, which increases the efficiency of managers.

We detail the functional capabilities of IIT in effective educational management in times of crisis: 1. real-time monitoring - tracking key indicators of educational activities and the external environment; 2. forecasting - using predictive analytics to predict possible development scenarios; 3. decision modeling - testing different management strategies without risking real processes; 4. personalization of learning - adapting educational trajectories depending on changing conditions; 5. resource optimization - effective distribution of finances, personnel and educational materials.

We outline the advantages of using IIT in effective educational management in times of crisis: reducing decision-making time; increasing the accuracy of forecasts; the possibility of comprehensive analysis of various data; flexibility and scalability of solutions.

We diagnose the problems and limitations of using IIT in effective educational management in times of crisis: lack of qualified specialists in the implementation and operation of IIT; high costs of developing and integrating technologies; risks

associated with cybersecurity and personal data protection; resistance to change from the staff of educational institutions.

Summary and conclusions.

Intelligent information technologies are an important element of modern anti-crisis management in the educational sphere. IITs allow educational institutions to move from a reactive approach to a proactive one, where the main emphasis is on forecasting and preventive measures. Thus, the use of IITs allows to increase the resilience of the education system to external shocks, improve the quality and efficiency of management decisions in the educational sphere and minimize the consequences of crises. In addition, the effective implementation and use of IITs contributes to the continuous development of the educational sector, making it more flexible, efficient and focused on the individual needs of each student. In the future, the synergy (including through hybridization) of anti-crisis management strategies and the capabilities of intelligent technologies (especially AI models [23] based on deep neural networks) will become a key factor in the competitiveness and stability of educational systems [24] in conditions of global instability.

Discussion.

The author puts forward the following argumentative thesis: the relevance of hybrid artificial intelligence as a key tool for innovative education management during crises is very high. Hybrid AI, which combines symbolic (based on logic and rules [25]) and subsymbolic (deep neural networks, classical machine learning) approaches [26], allows overcoming the limitations of traditional systems and offering more flexible and adaptive solutions in conditions of uncertainty [27]. Thus, the relevance of hybrid AI in crisis management lies in its ability to provide flexibility, personalization and efficiency, but its successful implementation requires a strategic approach and solving a multitude of ethical and technical problems [28], [29]. So, this is promising part of the author's future scientific R&D will be reflected in future publications.

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